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ABSTRACT

One approach to searching for determinants of interpersonal attraction involves the altering and studying of physiological arousal, psychological stress, and moods. On the basis of the reinforcement-affect model of attraction, it was hypothesized that the positive feelings obtained from undergoing relaxation exercises could serve to enhance interpersonal attraction in a social setting. A single-factor design tested this prediction by enabling a state of relaxation to be manipulated among dyads of previously unacquainted females immediately prior to their engaging in a five-minute interaction. Cognitive expectancies regarding the duration of the relaxing effects were also manipulated so that some of the subjects were told that their acquired relaxed feelings would last at least 30 minutes, while others were informed that their state of relaxation would dissipate within 60 seconds. Orthogonal contrasts were used to compare a control group with various relaxation groups, and the "effects last" group with "effects dissipate" group. Results indicate that a state of relaxation does promote interpersonal attraction, but that the relaxation-attraction relationship is mediated by the implanting of cognitive expectancies regarding the duration of the relaxing effects. (Author)

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The Effects of Relaxation and Cognitive Expectancy On Attraction in a Social Interaction

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The Effects of Relaxation and Cognitive Expectancy
On Attraction in a Social Interaction

The search for determinants of interpersonal attraction is an old one in social psychology and has been approached from a number of perspectives. One approach has been to examine how differences and similarities along relatively stable attributes, such as personality, attitudes, and intelligence, influence the quality of social relationships. Another involves the altering and studying of more temporary states, including physiological arousal, psychological stress, and moods. The present research is more closely aligned with the second tradition in that the subjective state of relaxation is manipulated, but there is also a unique twist - how cognitive expectancies can serve to influence both the quality of affective states (in this case relaxation) and the extent of reported attraction in a dyadic social interaction.

The most common way in which theorists have tried to explain attraction is through formulations based on principles of reinforcement. In a theory first outlined in 1970, Byrne and Clore provide an elegant conception of the reinforcement model of attraction. Their basic tenet is that we like those persons associated with positive affect and we dislike those persons associated with negative affect. Lott and Lott (1972, 1974) similarly employ principles of reinforcement to predict attraction but further emphasize that we may come to like people who are <u>incidentally</u> associated with positive experiences. Attraction for another may be determined by features of a situation rather than by particular characteristics of the other.

Gouaux (1971) tested this notion by using emotion-arousing movies to manipulate the feeling of his subjects. Female undergraduates viewed either a funny film designed to make them feel elated or a sad film designed to make them feel depressed. Following the film each subject reveived a completed attitude questionnaire purportedly from an anonymous, same-sex stranger. Gouaux found that "elated" females liked the stranger more than did the "depressed" females. Related studies have shown that various other manipulations of affect produce analogous effects on attraction (e.g., Friedman, Robin, Jacobson, & Clore, 1978; Griffitt, 1970; Griffitt & Veitch, 1971; Izard, 1964).

Having secured evidence that strong affective states like elation or depression influence liking, one might pose the question, "Can simply feeling comfortably relaxed in the presence of another enhance attraction?" A review of the literature on interpersonal attraction reveals an astonishing absence of studies on the social effects of relaxation. This is particularly curious in light of the fact that people spend a lot of time and effort attempting to get and feel relaxed with others. Even conventional wisdom would suggest that the surest way to consummate an intimate relationship is through the relaxing effects of alcohol. Another means of achieving relaxation involves the successive tensing and relaxing of various muscle sets in the body. This method has the advantage of being natural, reliable, and virtually free of any negative side effects. Therefore, in the present study the technique of progressive muscle relaxation was employed.

Training in relaxation as a potentially effective means for reducing various forms of tension and anxiety was first introduced with the publication of Jacobson's Progressive Relaxation in 1929. At the time the

book had little impact within psychotherapeutic circles. It was not until Wolpe (1958) modified the relaxation technique and incorporated it into systematic desensitization that the procedure actually achieved widespread professional use. The basic premise of the technique is that muscle tension is directly related to anxiety, and that an individual will experience a very marked and comforting reduction in felt anxiety if tense muscles can be made to feel loose.

Although most of the research associated with progressive relaxation has tended to focus on its role in the development of systematic desensitization, recently the relaxation response has received attention as a technique in its own right. Physiological measures taken on individuals immediately following a relaxation session indicate a generalized decrease in sympathetic nervous system activity, including a lowering of pulse rate, blood pressure, oxygen consumption, and skin conductance (Benson, Kotch, Crasswell, & Greenwood, 1977; Davidson & Schwartz, 1976). In addition to physiological measures, self-reports by subjects indicate reduced levels of tension and stress. Subjective experiences following relaxation instructions have been described as "peace of mind, feeling at ease with the world, and a general sense of well-being."

A recent investigation on variations in the relaxation induction procedure suggests that cognition, as well as muscle manipulation, plays an instrumental role in eliciting the relaxation response. Miller and Bornstein (1977) had subjects either undergo muscle relaxation, mental relaxation, a combination of the foregoing, or self-relaxation. The muscle relaxation group received the standard progressive relaxation

technique (Wolpe & Lazarus, 1966) while the mental relaxation subjects were asked to imagine several relaxing scenes. The self-relaxation group, regarded as a control, was simply instructed to sit quietly with their eyes cl[illegible]. In general, their results indicated that all of the training procedures were equally successful in inducing a state of relaxation as assessed via a physiological measure (i.e., electromyograph readings), two anxiety scales, and a post-experimental questionnaire. Apparently, even verbal suggestions of relaxation are enough to make a person feel relaxed.

A cognitive approach to the relaxation response is relevant to research being done on the disinhibitory effects of alcohol and expectancy set. Lang, Goeckner, Adesso and Marlatt (1975) demonstrated that subjects believing they had consumed alcohol were significantly more aggressive than subjects believing they had consumed a nonalcoholic beverage, irrespective of the actual alcoholic content of their drinks. Similarly, subjects' expectancies, rather than true intake of alcohol, have been found to influence levels of sexual arousal to erotic materials (Briddell, Rimm, Caddy, Krawitz, Shlis, & Wunderlin, 1978; Wilson & Lawson, 1976). If the effects of a potent drug like alcohol can be altered through the provision of cognitive expectancies, then certainly the effects of a relaxation induction procedure can similarly be altered. In the present research this possibility is examined via a manipulation of subjects' expectancies regarding the duration of the relaxing effects.

Prediction and Design

According to Byrne and Clore's (1970) and Lott and Lott's (1972, 1974)

reinforcement-affect model of attraction, if two persons happen to be together during the occurrence of something pleasant, ensuing positive feelings may become associated with the presence of the other. In the present study, pairs of unacquainted subjects were used in a test of this postulate with a state of relaxation as the positive conditioned affective response. It was predicted that pairs of subjects who undergo a procedure of progressive muscle relaxation will report greater attraction for each other than pairs of subjects who do not undergo such a procedure.

The relationship between relaxation and attraction is further hypothesized to be affected by subjects' cognitive processes. A second set of predictions is thus related to subjects' expectancies regarding the stability of the relaxing effects, and how such expectancies might influence the degree of interpersonal attraction. The assumption was made, and supported by pilot research, that if persons can relax simply by thinking about it, they can also maintain a state of relaxation, or conversely, cease feeling relaxed, through the manipulation of appropriate cognitive expectancies. It was therefore predicted that pairs of subjects who undergo the relaxation procedure and expect the effects to last for a while, will like each other more than pairs of subjects who undergo the relaxation procedure but expect the effects to quickly dissipate. If persons do, in fact, have some cognitive control over the relaxation response, then a firm belief that the relaxing effects are going to last indefinitely (e.g., for at least 30 minutes) should help to insure that they do. Similarly, persons believing that the relaxing effects will persist not longer than 60 seconds should readily return themselves to a normal state. Thus, the degree of generalized,

conditioned affect resulting from relaxation should correspond with cognitive expectancies regarding the stability of the effects.

The present study thus attempts to test the generality of certain aspects of the reinforcement-affect model. As in past investigations, subjects are exposed to manipulations of affect, and then measures of their attraction toward each other are obtained. However, the present study differs from previous research in two critical respects. It is the first to test the reinforcement model for those attraction effects resulting from subjects' expectancies regarding their conditioned affective state. Second, in this study, attraction is measured in a context in which subjects have the opportunity to actually socially interact with each other, rather than just "be" in each others' presence (Insko & Wilson, 1977). If subjects can go through a process of getting to know each other and the affective manipulation of relaxation still influences interpersonal attraction, then the conditioning effects are indeed very powerful.

To test these predictions a single-factor design was employed. There were four conditions consisting of: (1) a control group receiving no relaxation instruction; (2) a relaxation-control group receiving relaxation instruction but no cognitive expectancy; (3) a relaxation-effects last group receiving relaxation instruction along with the expectancy that the relaxing effects would last 30 minutes; and (4) a relaxation-effects dissipate group receiving relaxation instructions but with the expectancy that the relaxing effects would quickly dissipate. These four conditions enable three orthogonal contrasts that are relevant to the predicted

effects of relaxation and cognitive expectancies. These contrasts are described in Table 1. The first contrast allows a comparison of the effects of not relaxing versus the effects of relaxing. This contrast is predicted to be significant such that pairs of subjects who undergo

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Insert Table 1 about here

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a procedure of progressive muscle relaxation should report greater attraction than pairs of subjects who do not undergo such a procedure. The second contrast compares the relaxation group provided with no expectancy with the two relaxation groups with expectancies provided. It is not expected to be significant. A third contrast enables a comparison between the "relaxation-effects last" group and the "relaxation-effects" group. It is predicted that this contrast will be significant such that pairs of subjects believing the relaxing effects are to last will report greater attraction for each other than pairs of subjects believing the relaxing effects are to dissipate quickly.

Method

Subjects

The subjects were 80 females obtained from undergraduate introductory psychology classes at the University of North Carolina. Only females were used because of their greater availability in the subject pool. Participation in the study was in partial fulfillment of the course requirements. Subjects were requested to sign up in groups of two, with the restriction that the individuals within each session not know each other. The dyads were randomly assigned to one of four conditions in

the single-factor design. The conditions were: (1) Control - No Relaxation; (2) Relaxation-Control; (3) Relaxation-Effects Last; and (4) Relaxation-Effects Dissipate.

Procedure

Two subjects arrived together at the experimental session. Upon being seated in adjacent chairs in the experimental room, the two were informed by a female experimenter that the study had to do with "hemispheric functioning." The meaning of this expression was then described to them in terms of the operations of the left hemisphere versus the right hemisphere in the brain. They were then told that the experimenter was interested in whether interference from the left hemisphere caused forgetting in the right hemisphere. In order to test this, they would, during an initial phase of the study, listen to a selection of music because it was well documented that music stimulated the right hemisphere. As an interference task they would next be required to socially interact with each other since talking and processing what was heard demanded activity from the left, or verbal, hemisphere. Immediately following their social interaction they would then separate to go to adjacent rooms to complete some questionnaires. Finally, they were told that in the last phase of the study they would be tested for their musical memory in a task during which they would listen to 15-second long musical excerpts and be asked to identify whether or not they came from the selection of music originally heard during the first phase.

The manipulation of relaxation was introduced by telling subjects that some recent research suggested that a state of relaxation minimized decay of the auditory memory for music. The present experimenter was interested

in "checking this out." Thus, following their listening to music, but prior to their interaction, they would be asked to undergo a procedure known as progressive relaxation. An inquiry was made regarding whether or not any of the subjects had ever heard of, or actually gone through, such a procedure. None of them said they had. The experimenter continued with a brief description of the procedure.

At that point, information regarding the duration of the effects of being relaxed was first presented. Those subjects in the Relaxation-Effects Last condition were informed that for most people undergoing the relaxation procedure the feeling of being relaxed lasted at least 30 minutes. On the other hand, subjects in the Relaxation-Effects Dissipate condition were told that as soon as they finished their relaxation exercises, the feeling of being relaxed would decay and likely dissipate within 60 seconds. With the Relaxation-Control group, nothing was mentioned in regard to how long the feeling of relaxation would last.

Subjects in the Control-No Relaxation group were not exposed to the general rationale for going through a relaxation procedure. These subjects instead were told that since individuals varied greatly in their appreciation of, and reactions to, music, a general indication of their attitudes regarding music was needed. They would hence be administered a musical attitudes survey after listening to the music but before interacting. It should be mentioned that this music survey was not at all demanding but was, in fact, designed to be interesting for the average undergraduate to complete. Students were given the unique opportunity to air their opinions on various types of music and to express what music meant to them personally.

Following these introductory comments, subjects were then asked to move to two new chairs situated back to back, 45.72 cm apart. There they were instructed to put on a set of Cardan stereo headphones in order to hear the three-and-a-half-minute-long piece of music. The music was recorded and played on a RD2550 Sanyo stereo cassette deck with a dual hook-up for headphones. The melody selected was a composition entitled, "Paris Nocturne," written by Dan Fogleberg and performed by him and Tim Weisberg. On a nine point scale, subjects' mean rating of enjoyment of the musical selection was 7.89 (S.D. = .431), with 1 = not at all enjoyable and 9 = extremely enjoyable. Keeping their headphones on after listening to the music, subjects then heard, depending on experimental condition, taped instructions for progressive muscle relaxation, or a taped 16-item survey of attitudes about music. Subjects in the Control-No Relaxation group were provided with a pencil, paper, and a clipboard on which to write their responses. Both the relaxation instructions and the questionnaire lasted 16 minutes.

Subjects were next asked to remove their headphones and turn their chairs all the way around so that they would be facing each other. For those subjects in the relaxation conditions, the experimenter inquired as to how they were feeling. All the subjects verbally reported feeling quite relaxed. The experimenter then reminded subjects in the Relaxation-Effects Last condition that they probably would continue feeling that way for the next 30 minutes, while those in the Relaxation-Effects Dissipate condition were reminded that any feelings of relaxation were only temporary. Subjects in the Relaxation-Control condition were not told anything about the duration of the relaxing effects.

The experimenter proceeded by informing all subjects that they were now ready for the interaction part of the study. They were instructed to talk to each other for five minutes, choosing topics they would normally use when getting to know someone. As an aid, subjects were provided with a suggested list of topics "that other subjects had used." This list included musical preferences, their majors, interests in sports, and possible mutual friends. The subjects were further told that although they might initially feel somewhat self-conscious about this request, once they got going they would probably have no problem being able to engage in a normal conversation. The experimenter set a timer for five minutes and informed the subjects that they could begin interacting and to continue until the timer sounded. She then physically moved away from the subjects but remained an unobtrusive figure in the room while they conversed. When their five minutes were up it was always made clear to the subjects at that point that they would not be interacting with each other anymore in the present experiment. Finally, they were directed to separate rooms where a questionnaire assessing impressions regarding the other subject was waiting for them.

Dependent Variables

The impression questionnaire began with a statement stressing to subjects the importance of their responding to the questions that would follow in a frank and honest manner. They were assured that their answers would remain both "anonymous and confidential."

There followed a series of 20 questions, the first seven of which related to music in order to further entrench the cover story, and the final 13 of which comprised a manipulation check for relaxation and 12 dependent variables.

Question 13, "To what extent do you like your partner?" represented the main dependent variable for attraction. The subjects indicated their responses to this question, as well as to the others, on a 9-point scale rating in which 1 was labelled "not at all," 3 was labelled "somewhat," 5 was labelled "midpoint," 7 was labelled "very much," and 9 was labelled "extremely." The remaining questions were asked in the hope of finding additional factors which might shed light on the relaxation-attraction relationship. The other questions were: "9. To what extent did you like participating in the acquaintance and interaction part of this experiment? 10. To what extent do you like the experimenter? 11. How relaxed did you feel while talking and interacting with your partner? 12. When interacting with someone for the first time most people experience, in varying degrees, some uneasiness - they may have some thoughts about the other person not totally liking or accepting them. Compared to the way you usually feel when interacting with a new person, to what extent did you experience this kind of "uneasiness" with your partner? 14. To what extent do you like other introductory psychology students? 15. To what extent do you think your partner's personality is similar to your own? 16. To what extent do you think your partner's beliefs and attitudes are similar to your own? 17. To what extent do you think your partner likes you? 18. How intimate was your partner in what he or she had to say? 19. Was your partner enthusiastic in what he or she had to say? 20. To what extent do you think listening to the music helped the flow of conversation between you and your partner?"

Following completion of the questionnaire, subjects were informed that their participation in the study was now finished; that they would not be listening

to musical excerpts for purposes of identification. The subjects were fully debriefed as to the true nature of the study and it was made certain that any belief in the rather elaborate cover story involving interference in hemispheric functioning was totally dispelled. They were also probed for suspicion of any deception. Most assumed they had been deceived because, after all, "isn't that what happens in psychology experiments?" Their conjectures regarding what form the deception might have taken were quite naive, however, and failed to warrant the elimination of any data. For example, many subjects thought that the supposed upcoming musical excerpts would actually not come from the selection of music originally heard. Such subject hypothesizing was deemed irrelevant to the obtained ratings on interpersonal attraction.

Results

Because individual subjects interacted in a group, the dyad was employed as the unit of analysis. Hence, the scores for the two members of each dyad were averaged to give a single observation. There were ten observations in each of the four conditions. Using the described orthogonal contrasts, a MANOVA was performed on the average scores for the relevant dependent variables.

Responses to question 8, "How relaxed did you feel immediately after listening to the second tape, prior to interacting with your partner?" were used as an index of the success of the manipulation of relaxation. As desired, the orthogonal contrast comparing the group not undergoing relaxation with the three groups undergoing relaxation was highly significant, $F(1,36) = 17.32$, $p < .001$. The means are provided in Table 2.

Insert Table 2 about here

On the basis of the reinforcement-affect model it was predicted that subjects undergoing a procedure of relaxation prior to interacting would report greater attraction for each other than subjects not undergoing such a procedure. A multivariate analysis of the orthogonal contrast comparing the Control-No Relaxation condition and the three relaxation conditions revealed the predicted effect, Multivariate $F(12,24) = 2.58$, $p < .02$. Subsequent univariate analyses indicated that the "relaxed" subjects reported that they liked their partner more, $F(1,26) = 15.45$, $p < .001$, they liked participating in the social interaction more, $F(1,26) = 6.66$, $p < .01$, liked the experimenter more, $F(1,26) = 4.52$, $p < .04$, felt more relaxed while interacting, $F(1,26) = 11.29$, $p < .002$, and experienced less uneasiness with their partner, $F(1,26) = 10.00$, $p < .002$, than the "normal" control subjects. The multivariate analysis on the second contrast comparing the no expectancy groups was not significant.

The third contrast allowed a comparison of the Relaxation-Effects Last and the Relaxation-Effects Dissipate groups. As predicted, the multivariate analysis indicated that the "effects last" subjects reported greater attraction than the "effects dissipate" subjects, Multivariate $F(12,24) = 2.27$, $p < .04$. The univariate analysis revealed that subjects in the Relaxation-Effects Last condition liked their partner more, $F(1,26) = 12.26$, $p < .001$, liked participating in the acquaintance exercise more, $F(1,26) = 3.31$, $p < .08$, were more relaxed while interacting, $F(1,26) = 9.53$, $p < .004$, experienced less uneasiness with their partner, $F(1,26) = 6.23$, $p < .02$, believed their partner liked them more, $F(1,26) = 3.58$, $p < .07$, and thought their partner was more similar in personality, $F(1,26) = 4.44$, $p < .04$, and belief and attitudes, $F(1,36) =$

3.69, $p < .06$, than subjects in the Relaxation-Effects Dissipate condition. There was also a marked tendency for the "effects last" partners to think that the music helped the flow of their conversation more than the "effects dissipate" partners, $F(1,36) = 11.05$, $p < .002$. See Table 2 for means.

Discussion

The results of this research provide support for the proposal that a state of relaxation induces positive affect which, in turn, enhances attraction in a dyadic social interaction. It is further evident that when a person has an expectation that the positive experience of relaxation is going to last throughout the period of interacting, this cognition highlights the attraction effect. A cognitive expectancy that the relaxing effects are only temporary tends to suppress the attraction effect.

Several assessments of attraction support the above conclusion. Subjects who underwent a procedure of progressive muscle relaxation prior to engaging in a social interaction reported that they liked their partners more, felt more relaxed while interacting, and experienced less uneasiness with their partners than subjects who did not undergo such a procedure.

The effects of the relaxation procedure are apparently subject to cognitive control. Compared to subjects who were told that the relaxing effects are short-lived, subjects informed that the relaxing effects would last a while reported liking their partners to a greater extent, believed that their partners liked them to a greater extent, liked participating in the acquaintance exercise more, were more relaxed while interacting, and experienced less uneasiness with their partner. The pattern, then, for the comparison of subjects who did <u>not</u> go through the relaxation procedure and those who did

is similar to the pattern obtained for the comparison of subjects who went through the relaxation procedure with an expectancy that the relaxing effects would last and those who went through the procedure with an expectancy that the effects would soon dissipate.

Subjects given the "effects last" cognitive set were also more likely than subjects given the "effects dissipate" cognitive set to think that the listening to music played a facilitating role in the flow of conversation. Perhaps subjects in the "effects last" condition were, at some level, aware that their social interaction was a bit more pleastant than what typically might occur in a psychology experiment, but they were unable to accurately pin down the source of their positive affect. Instead of assigning credit to the lingering effects of the relaxation procedure, which was introduced strictly as an aid for their musical memory, subjects turned to the only reasonable explanation they had - the pleasant music they had both listened to.

It is perhaps natural to question the extent to which demand characteristics could account for the findings of this research. In particular, there exists the possibility that demand characteristics, and not an actual state of relaxation, are responsible for subjects saying, or more specifically indicating in their questionnaire responses, that they were successfully relaxed. This seems unlikely given the existing body of research demonstrating that following a session of progressive muscle relaxation persons do, in fact, become relaxed (e.g., Davidson & Schwartz, 1976). Furthermore, it was clearly evident from simple observation of subjects' postures that those who listened to the relaxation tape were indeed relaxed. But what about the demand effects of informing subjects that they were going to maintain a

state of relaxation, or conversely, cease feeling relaxed? Would these subjects be hesitant to indicate that they, personally, did not feel the way the experimenter wanted them to feel? Perhaps. However, it is doubtful that subjects would proceed to decipher the hypothesized relationship between relaxation and attraction. Why then did subjects indicate they were more attracted to each other when they were told the relaxing effects were going to last, compared to when they were told they were going to dissipate? The thesis of this paper is that they reported greater or lesser attraction according to cognitive manipulation because their expectancies actually did determine the extent of their relaxation which, in turn, influenced their degree of attraction.

Summarizing, the present research provides evidence that undergoing progressive relaxation prior to socially interacting leads to the enhancement of interpersonal attraction. This finding was interpreted in terms of the conditioned positive affect resulting from being comfortably relaxed in the presence of another. It was also demonstrated that cognitive factors play a role in the relaxation-attraction relationship. Subjects provided with an expectancy that their state of relaxation was going to last throughout a period of social exchange report greater liking for their partner than subjects provided with an expectancy that their relaxation was going to dissipate quickly. In conclusion, the present study indicates that reinforcement theories of attraction need to more clearly specify the influence of cognitive factors that engender those affective states leading to attraction.

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TABLE 1

Three Orthogonal Contrasts

	Control-No Relaxation	Relaxation-Control	Relaxation-Effects Last	Relaxation-Effects Dissipate
1. No Relaxation vs. Relaxation	3	-1	-1	-1
2. Relaxation-No Expectancy vs. Relaxation-Expectancy	0	2	-1	-1
3. Relaxation-Effects Last vs. Relaxation-Effects Dissipate	0	0	-1	1

Table 2

Mean Rating of Attraction as a Function of Relaxation and Cognitve Expectancy

	Control-No Relaxation	Relaxation Control	Relaxation Effects Last	Relaxation-Effects Dissipate
Relaxed before interacting	5.50	6.60	7.15	6.70
Liking for partner	5.65	6.25	6.85	6.05
Liked interacting	5.20	6.45	6.70	5.75
Liked experimenter	5.75	6.15	6.65	6.15
Relaxed while interacting	4.35	5.65	6.45	4.95
Uneasiness with partner	4.50	3.20	2.60	3.80
Liking for other students	5.60	5.55	5.85	5.60
Similarity of personality	4.95	4.75	5.45	4.50
Similarity of beliefs-attitudes	4.80	4.65	5.30	4.55
Partner likes you	5.30	5.35	5.80	5.25
Intimacy of Partner	3.35	3.65	4.05	2.85
Enthusiasm of partner	4.70	4.80	5.30	5.10
Music helped conversation	3.80	3.30	5.30	3.50

Note: Higher scores indicate higher ratings.